

IN THE SPECIFICATION:

Please amend the paragraph beginning on page 8, line 30 as follows:

Still yet another further aspect of the present invention relates to the use of an immunogenic composition comprising a *Plasmodium* GPI inositolglycan domain or derivative or equivalent thereof which inositolglycan domain comprises insufficient lipidic domain of a *Plasmodium* GPI to elicit or induce an immune response directed to a GPI lipidic domain in the manufacture of a medicament for the therapeutic and/or prophylactic treatment of a mammalian disease condition ~~characterised~~characterized by infection with said *Plasmodium*.

Please amend the paragraph beginning on page 10, line 19 as follows:

Another aspect of the present invention relates to a method of inhibiting, halting or delaying the onset of progression of a mammalian disease condition ~~characterised~~characterized by a microorganism infection said method comprising administering to said mammal an effective amount of an antibody has hereinbefore described.

Please amend the paragraph beginning on page 12, line 8 as follows:

Accordingly, the present invention should also be understood to extend to a method for ~~analysing~~analyzing, designing and/or modifying an agent capable of interacting with an anti-GPI glycan immunointeractive molecule binding site, which immunointeractive molecule is identifiable ~~utilising~~utilizing the diagnostic methodology hereinbefore disclosed, said method comprising contacting said immunointeractive molecule or derivative thereof with a putative agent and assessing the degree of interactive complementarity of said agent with said binding site.

Please amend the paragraph beginning on page 13, line 8 as follows:

Figure 3 is a graphical representation of the epitope mapping of anti-lipid monoclonal antibodies. Monoclonal antibody 1C7 to GPI derived from mice immunized with free GPI (1,5) were screened by competition ELISA for reactivity with GPI in the presence or absence of PI and GPI glycan competitors.

Please amend the paragraph beginning on page 13, line 25 as follows:

Figure 6 is a graphical representation of monoclonal 1C7 ~~synergizysynergize~~ with GPI, phorbol esters and parasite extracts in the induction of TNF output from murine C3H/HeJ macrophages.

Please amend the paragraph beginning on page 14, line 16 as follows:

Figure 11 is a graphical representation of monoclonal antibodies to the *P. falciparum* GPI inositolglycan, upon passive transfer, substantially protecting mice against cerebral malaria and other pathologies.

Please amend the paragraph beginning on page 15, line 22 as follows:

Figure 15 is an image of immunization against the synthetic GPI glycan substantially protecting against murine cerebral malaria, pulmonary oedema and acidosis. **a.** Kaplan-Meier survival plots, and **b** parasitaemias, to 15 days post infection, of KLH-glycan-immunized (closed circles) and sham-immunized (open squares) mice challenged with *P. berghei* ANKA. **c.** Haemotoxylin-Eosin stained sections of brain tissue showing blood vessels from KLH-glycan immunized (left and ~~centrecenter~~ panels) and sham-immunized (right panel) mice sacrificed on day 6 post-infection. **d.** As an index of pulmonary oedema, the ratio of wet weight to dry weight of lungs from KLH-glycan-immunized and sham-immunized animals at day 6 post-infection are expressed as a proportion of the lung wet:dry weight ratio of age/sex matched uninfected controls. **e.** pH of serum drawn at day 6 from uninfected and *P. berghei*-ANKA-infected immunized and sham-immunized donors. *, $p > 0.05$.

Please amend the paragraph beginning on page 18, line 4 as follows:

The present invention is predicated on the surprising observation that mice ~~immunisedimmunized~~ with purified, intact, free GPI mount an IgM dominated response directed predominantly to the lipidic domain of the molecule, which cross reacts with host GPI lipidic domains which are exposed at host cell surfaces. The antibodies are not protective clinically against subsequent parasite infection. In fact, passive transfer of these antibodies exacerbates disease severity. However, ~~immunisationimmunization~~ with the glycan domain of malarial GPI results in IgG antibodies interactive with the glycan domain of GPI and mice thus ~~immunisedimmunized~~ are substantially protected against pathology induced by subsequent malaria challenge. Passive transfer of these IgG antibodies is protective against pathology. The

inventors have demonstrated, therefore, that IgM antibodies to the lipidic domain and IgG antibodies to the glycan domain of the malaria GPI differ in their effects, the former promoting disease and the latter preventing it. It should be understood that in preventing or ~~minimising~~minimizing the induction of an immune response directed to the GPI of a microorganism, the onset of an immune response directed to lipidic domain of the subject mammal (host) is thereby prevented or ~~minimised~~minimized by virtue of ~~minimising~~minimizing the production of antibodies to a microorganism GPI which would otherwise cross-react with the host GPI.

Please amend the paragraph beginning on page 20, line 26 as follows:

"Derivatives" and "equivalents" should be understood to include fragments, parts, portions, chemical equivalents, mutants, homologs and analogs. Chemical equivalents of a GPI inositolglycan domain can act as a functional analog of the GPI inositolglycan domain. For example, a chemical equivalent of the GPI inositolglycan domain includes a GPI inositolglycan domain in which the phosphoglycerol component of the inositolglycan has been modified to increase hydrophobicity. This may be achieved by replacement with truncated, partial or modified fatty acids or other hydrophobic moieties and acts to improve the immunogenicity or stability of the molecule, without generating an undesirable antibody response. In another example, a chemical equivalent includes GPI glycan in which the terminal inositol-phosphoglycerol is replaced with inositol-1,2 cyclic-phosphate. Without limiting the present invention in any way, such a change will not substantially alter the functional properties of the derivatised GPI glycan relative to non-derivatised molecules. Rather, such a substitution is the inherent outcome of certain chemical synthesis procedures. Chemical equivalents may not necessarily be derived from a GPI inositolglycan domain but may share certain conformational similarities. Alternatively, chemical equivalents may be specifically designed to mimic certain immunological and physiochemical properties of the GPI inositolglycan domain. Chemical equivalents may be chemically ~~synthesised~~synthesized or may be detected following, for example, natural product screening. Chemical equivalents also include synthetic carbohydrates and peptide mimics. Homologs of GPI inositolglycan domains contemplated herein include, but are not limited to, GPI inositolglycan domains from different species including, for example,

Saccharomyces. Fragments, include portions such as the glycan component of the inositolglycan domain, which portions are effective in achieving the object of the present invention.

Please amend the paragraph beginning on page 24, line 25 as follows:

Reference to "derivative" herein should be understood to encompass, in one preferred embodiment, an immunogenic composition comprising a GPI inositolglycan domain derivative wherein the terminal inositol-phosphoglycerol is substituted with inositol-1,2 cyclic-phosphate. Without limiting the present invention in any way, such a substitution is a characteristic outcome where certain forms of chemical synthesis are ~~utilised~~utilized, such as that exemplified in Example 18.

Please amend the paragraph beginning on page 26, line 14 as follows:

Without intending to limit this aspect of the present invention to any one theory or mode of action, primary and secondary T lymphocyte responses to some GPI-anchored surface protein antigens are inhibited by the GPI anchor. Examples of such protein antigens includes Circumsporozoite (CS) proteins of *P. falciparum* and *P. berghei* and the membrane-form of Variant Surface Glycoprotein of *T. brucei*. Since ~~immunisation~~immunization against synthetic or recombinant peptides or proteins of GPI-anchored surface molecules such as the CS protein, MSP-1, MSP-2 or MSP-4, for example, may be insufficient to allow MHC Class II anamnestic boosting when the native antigens are encountered during natural parasitic challenge due to the induction of immunosuppression, ~~immunisation~~immunization against the GPI moiety provides a means to alleviate this immunosuppression.

Please amend the paragraph beginning on page 26, line 26 as follows:

(iii) The GPI inositolglycan domain may comprise only part of the target epitope. For example, peptide sequences, other carbohydrates (and any associated post-translational modifications) corresponding to C-terminal domains of native GPI-anchored proteins or GPI-anchored glycosconjugates may also form part of the target GPI inositolglycan domain epitope. Removal of any part of the epitope (by removing the portion of the C-terminal domain which forms part of the GPI inositolglycan domain epitope) may lead to reduction or loss of binding of antibodies. Said peptide sequences or carbohydrates would therefore be conjugated to said GPI inositolglycan domain. For example, some antibodies to malarial GPI, while specifically

~~neutralising~~neutralizing GPI function, recognise epitopes which predominantly include the inositolglycan but also include portions of the protein to which the GPIs are actually bound in nature, i.e. the adjacent C-terminal portions of GPI-anchored proteins. The presence of peptide domains can also improve the affinity of certain antibodies, for example by helping to stabilise the inositolglycan conformationally. Furthermore, such conjugation can render a relatively unimmunogenic inositolglycan domain sufficiently immunogenic. Specifically, the inclusion of a C-terminal peptide determinant, for example, may help increase the immunogenicity of the inositolglycan by forming a composite antigen which is more immunologically foreign than inositolglycan alone.

Please amend the paragraph beginning on page 33, line 14 as follows:

An "effective amount" means an amount necessary at least partly to attain the desired immune response, or to prevent or to delay the onset or inhibit progression or halt altogether, the onset or progression of a particular condition being treated. This amount varies depending upon the health and physical condition of the individual to be treated, the taxonomic group of individual to be treated, the capacity of the individual's immune system to ~~synthesises~~synthesize antibodies, the degree of protection desired, the formulation of the vaccine, the assessment of the medical situation, and other relevant factors. It is expected that the amount will fall in a relatively broad range that can be determined through routine trials.

Please amend the paragraph beginning on page 44, line 21 as follows:

Sterile injectable solutions are prepared by incorporating the active compounds in the required amount in the appropriate solvent with various of the other ingredients enumerated above, as required, followed by filtered ~~sterilisation~~sterilization. Generally, dispersions are prepared by incorporating the various ~~sterilised~~sterilized active ingredient into a sterile vehicle which contains the basic dispersion medium and the required other ingredients from those enumerated above. In the case of sterile powders for the preparation of sterile injectable solutions, the preferred methods of preparation are vacuum drying and the freeze-drying technique which yield a powder of the active ingredient plus any additional desired ingredient from previously sterile-filtered solution thereof.

Please amend the paragraph beginning on page 47, line 4 as follows:

Administration of the immunogenic GPI inositolglycan domain of the present invention induces antibody production and in particular IgG production. Said antibodies are involved in inhibiting, halting or delaying the onset or progression of symptoms associated with microorganism infection such as, for example, pathological responses to a parasitic infection. Said antibodies function, for example, by ~~neutralising~~neutralizing parasite induced TNF induction or by direct antiparasitic effect such as killing the parasite by binding to its surface and inhibiting its growth or development or otherwise inhibiting its onward progression. Antibodies directed to the GPI inositolglycan domain or derivatives thereof may therefore also be ~~utilised~~utilized in treating parasitic infections therapeutically or prophylactically.

Please amend the paragraph beginning on page 50, line 7 as follows:

In yet another further aspect, the present invention envisages diagnostic, monitoring, screening or other qualitative or quantitative antigen based assessments of either an immune response or a population of immunointeractive molecules directed to a microorganism, such as a parasite, ~~utilising~~utilizing the GPI inositolglycan molecules hereinbefore disclosed, in particular the synthetic GPI inositolglycan molecule disclosed herein.

Please delete blank page 69.

Please amend the paragraph beginning on page 73, line 5 as follows:

Purified, glucosamine-labelled *P.falciparum*~~*P. falciparum*~~ GPIs, in which all dpms were detected in the organic phase following butanol/water partitioning, were subject to base hydrolysis by suspension in methanol/ammonia 1:1 for 6 hours at 50° C, followed by partitioning between water and water saturated butanol. Essentially 100% of label was then recovered from the aqueous phase. The aqueous phase was twice extracted with water-saturated butanol, lyophilized, and flash evaporated with methanol.

Please amend the paragraph beginning on page 73, line 22 as follows:

Base-hydrolysed GPI glycans were spiked with phenol red and blue dextran in 10mM Ammonium Acetate and further size-fractionated by passage through a 1 cm x.1.2 metre Biogel P4 column equilibrated in 100mM Ammonium acetate in water. The column had previously

been exhaustively calibrated by repeated analytical runs with GPI mixed with acid ~~hydrolysed~~hydrolyzed dextran markers to yield the relative elution position of glucose units detected by staining with orcinol in concentrated sulfuric acid. The column runs proved to be highly reproducible. For preparative purposes the dextran markers were omitted. The GPI peak was detected by scintillation counting of aliquots.